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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/750,004	12/27/2000	Stefan Illek	P00,1975	6618

7590

07/17/2002

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EXAMINER

BAUMEISTER, BRADLEY W

ART UNIT

PAPER NUMBER

2815

DATE MAILED: 07/17/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.  
09/750,004

Applicant(s)

Illek et al.

Examiner  
B. William Baumeister

Art Unit  
2815



-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on Apr 15, 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 15-47 is/are pending in the application.
- 4a) Of the above, claim(s) 43-47 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 15-42 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claims \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on Dec 27, 2000 is/are a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some\* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \*See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s). 6 6) ☐ Other:

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## **DETAILED ACTION**

### ***Election/Restriction***

1. Newly submitted claims 43-47 are directed to an invention that is independent or distinct from the invention originally claimed for the following reasons:

- I. Claims 15-42 are drawn to an LED, classified in class 257, subclass 98.
- II. Claims 43-47 are drawn to a method of making an LED, classified in class 438, subclass 22+.

2. The inventions are distinct, each from the other because of the following reasons:

Inventions II and I are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case unpatentability of the Group I invention would not necessarily imply unpatentability of the Group II invention, since the device of the group I invention could be made by processes materially different from those of the Group II invention. For example, as an alternative to claim 43, the LED of claim 15 does not need to be diced.

3. Because these inventions are distinct for the reasons given above, the inventions have acquired a separate status in the art because of their recognized divergent subject matter as shown by their different classification, the search required for Group II is not required for Group I, and

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separate examination would be required, restriction for examination purposes as indicated is proper.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 43-47 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

#### *Drawings*

4. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the optical blooming coating as recited in claims 34-36 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

#### *Claim Objections*

5. Claim 17 is objected to because of the following informalities: no upper limit is recited for the expression " $x+y\leq$ ." " $x+y\leq 1$ " is presumed, but appropriate correction is required.

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*Claim Rejections - 35 USC § 112*

6. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

7. Claims 29, 30 and 34-36 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

a. Regarding claims 29 and 30, the specification does not provide support for an active thin film layer having a thickness as small as 5 microns, the lower range limit set forth in both claims.

b. Regarding claims 34-36, the specification does not provide support for an optical blooming coating on a surface of the thin-film layer that is opposite to the carrier substrate.

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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9. Claims 19 and 24-26 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

a. Claim 19 recites the limitation "said active thin-film layers" (plural) in the last line. There is insufficient antecedent basis for this limitation in the claim because independent claim 15 from which claim 19 depends recites "an active thin-film layer" in line 2 (singular).

10. Claim 33 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is unclear what structural element the term "at that side facing toward said thin-film layer" is intended to modify or mean, since no structure other than the thin-film layer itself is recited.

***Claim Rejections - 35 USC § 102***

11. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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12. Insofar as definite, claims 15-28, 31-34 and 37-42 are rejected under 35 U.S.C. 102(b) as being anticipated by JP '731 (JPO machine translation included).

a. JP '731 discloses an LED wherein tapered grooves are either diced or etched into a surface which is flip-chip bonded to contacts (carrier substrate), through the active zone, and light is emitted from the opposite side. The mesas are tapered at angles of 30 to 60 degrees.

b. Regarding claims 27 and 28, reflective layers comprising Au/AuZn electrodes 5 and insulating layers of SiO<sub>2</sub>/TiO<sub>2</sub> cover the mesas. An antireflection (optical blooming) layer of TiO<sub>2</sub> is formed on the light emission surface.

c. Regarding claim 31, the claimed thin-film layer reads on layers 2 and 3, and as such, the claim is anticipated because the cavity depth is greater than the combined thickness of these two layers.

d. Regarding claim 37, contacts 4 and 5 are formed in locations wherein no cavity is formed in an opposite region.

13. Insofar as definite, claims 15-22, 24-26, 29, 32, 33 and 38 are rejected under 35 U.S.C. 102(b) as being anticipated by Umeda et al. '587 (made of record in IDS #6).

a. The embodiment of FIG 3 as defined and explained therein and in the embodiment of FIG 2, can be interpreted such that the active thin-film layer is composed of either (1) layers 23, 24 and 26 or alternatively (2) layers 24 and 26, with layer 23 serving as an additional substrate &/or window layer additionally formed on the active thin-film layer. The pn junction interface

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functions as the photon-emitting active zone. In either event, the dome surface reflects light towards the surface adjacent electrode 22.

*Claim Rejections - 35 USC § 103*

14. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

15. Claims 29, 30, 35 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP '731 as applied to the claims above.

a. Regarding claims 29 and 30, the JPO machine translation of JP '731 does not appear to indicate that the specific layer thicknesses are disclosed. Nonetheless, providing the chip with these thicknesses does not produce any unexpected results, and the reference teaches the general conditions for improving light emission by providing tapered mesas. It would have been obvious to one of ordinary skill in the art at the time of the invention to adjust the respective materials' geometric dimensions to maximize light emission efficiency, since the external emission is a function specific materials' indexes of refraction and geometry, as taught for example, by the reference and Snell's law.



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b. Regarding claims 35 and 36, the reference discloses a specific example of a TiO<sub>2</sub> antireflection layer as opposed to one composed of SiN or ITO. Nonetheless, the use of half-wave-thick antireflection coatings was generally well known to those of ordinary skill in the art at the time of the invention, and employing either of these specific materials would have been obvious since they are both transparent to visible wavelengths and passivate the LED.

#### *Response to Arguments*

16. Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.

#### *Conclusion*

17. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however,

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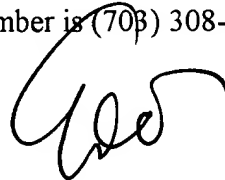
will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

18. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a. JP 406268252 with JPO machine translation (corresponds to JPO '684 application abstract in IDS paper #4, citation AS.

#### INFORMATION ON HOW TO CONTACT THE USPTO

19. Any inquiry concerning this communication or earlier communications from the examiner should be directed to the examiner, **B. William Baumeister**, at (703) 306-9165. The examiner can normally be reached Monday through Friday, 8:30 a.m. to 5:00 p.m. If the Examiner is not available, the Examiner's supervisor, Mr. Eddie Lee, can be reached at (703) 308-1690. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0956.



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B. William Baumeister

Patent Examiner, Art Unit 2815

July 10, 2002